PATENT APPLICATION

PATENT AND TRADEMARK OFFICE

BEFORE THE HONORABLE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the Application of

Ludovic POUPINET et al.

On Appeal from Group: 1794

Application No.: 10/535,338

Examiner: G. HIGGINS

Filed: October 19, 2005

Docket No.: 123936

For: OPTICAL RECORDING MEDIUM BASED ON A TELLURIUM AND ZINC ALLOY

APPEAL BRIEF TRANSMITTAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Attached hereto is our Brief on Appeal in the above-identified application.

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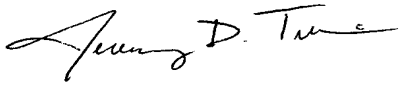
Respectfully submitted,



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PATENT APPLICATION

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BRIEF ON APPEAL

Appeal from Group 1794

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I. REAL PARTY IN INTEREST

The real party in interest for this appeal and the present application is 1) Commissariat A L'Energie Atomique and 2) MPO International, by way of an Assignment recorded in the U.S. Patent and Trademark Office at Reel 003808, Frame 0191.

II. RELATED APPEALS AND INTERFERENCES

There are no prior or pending appeals, interferences or judicial proceedings, known to Appellant, Appellant's representative, or the Assignee, that may be related to, or that will directly affect or be directly affected by or have a bearing upon, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 12-16 and 20-22 are on appeal.

Claims 12-16 and 20-22 are pending.

Claims 12-16 and 20-22 are rejected.

Claims 1-11 and 17-19 are canceled.

IV. STATUS OF AMENDMENTS

An Amendment After Final Rejection was filed on November 21, 2008. By an Advisory Action dated December 3, 2008, it was indicated that the requested amendments had been entered.

A subsequent Amendment After Final Rejection was filed on December 8, 2008 to correct an error in claim 15. Appellants have not yet received a further Advisory Action. Claim 15 herein (Appendix A) includes the change from the subsequent Amendment After Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Claim 12 is directed an optical recording medium comprising an active layer (see, e.g., Figure 1, reference number 2) made of an inorganic material, presenting a front face (see, e.g., Figure 1, reference number 3) for receiving an optical radiation (see, e.g., Figure 1, reference number 4) during writing operations, and a rear face (see, e.g., Figure 1, reference number 5). See page 3, lines 22-28 and Figure 1 of the specification. The inorganic material of the active layer is a tellurium and zinc alloy consisting of an atomic percentage of between 60% and 70% of zinc and between 30% and 40% of tellurium. See page 2, lines 16-19 and page 4, lines 2-4 of the specification.

Optical recording can be performed in colorant materials (e.g., CD-R: compact disc recordable and DVD-R: digital versatile disk recordable type processes) and inorganic materials. See page 1, lines 12-14 of the specification. Optical recordation using inorganic materials is advantageous in terms of production cost and a longer recording rate as the presence of the inorganic material reduces the reflection of the laser beam on the surface of the disk. See page 1, lines 14-15 and lines 18-19 of the specification. Prior to the present application, irreversible optical recording mechanisms, such as laser ablation, were performed in CD-R technology using tellurium by itself or metal alloys (i.e., inorganic materials) comprised of tellurium, arsenic, antimony, selenium and sulfur inorganic materials. See page 1, lines 20-22 of the specification. However, these materials did not enable good writing quality or the necessary storage density for DVD-R format. See page 2, lines 5-6 of the specification.

Furthermore, CD-R optical recording mechanisms required a laser with a power between 40 mW and 300 mW to form a mark of about 10 μm. See page 1, lines 26-28 of the specification. However, the present inventors determined the proper components and amount of those components for DVD-R technology that enabled sufficient writing quality (i.e., mark

resolution) and storage density. The inventors found that the previous components for CD-R technology were not transferable to DVD-R optical recording mechanisms because DVD-R optical recording mediums required a less powerful laser (i.e., about 10 mW) to form a much smaller mark (i.e., 400 nm). See page 1, lines 25-30 and page 2, lines 13-15 of the specification.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejection are presented for review:

(1) Claims 12-14 and 17-20 are rejected as allegedly obvious under 35 U.S.C. §103(a) over U.S. Patent No. 4,405,706 ("Takahashi");

(2) Claims 15-16 are rejected under 35 U.S.C. §103(a) as allegedly obvious over Takahashi in view of either U.S. Patent No. 6,177,168 ("Stevens") or U.S. Patent No. 4,450,553 ("Holster").

(3) Claims 21 and 22 are rejected under 35 U.S.C. §103(a) as allegedly obvious over Takahashi in view of U.S. Patent No. 5,354,590 ("Tamura").

VII. ARGUMENT

A. Claims 12-14 and 17-20 Would Not Have Been Obvious From Takahashi

Claims 12-14 and 17-20 require an optical recording medium comprising an active layer made of inorganic material, presenting a front face for receiving an optical radiation during writing operations, and a rear face, wherein the inorganic material is a tellurium and zinc alloy consisting of an atomic percentage of between 60% and 70% of zinc and between 30% and 40% of tellurium.

The Examiner alleges that Takahashi's disclosure of the preferred metals (including Zn and Te), among seven "preferred" metals (see Takahashi, col. 3, lines 52-58), allegedly would have provided one of ordinary skill in the art with a reason or rationale to have selected Zn and Te from the preferred list of metals and to have formed a bimetal alloy therefrom for a recording layer.

Furthermore, although the Examiner acknowledged that Takahashi does not disclose the specific atomic percentages recited in claims 12 and 13, the Examiner alleges that it would have been within the knowledge of one of ordinary skill in the art to have optimized the atomic percentages of Zn and Te in the Zn-Te alloy allegedly suggested by Takahashi. Appellants respectfully disagrees with the Examiner's conclusions.

1. The Examiner's Reasoning Is Clearly Based On Impermissible Hindsight In View Of Appellants' Specification.

Appellants respectfully submit that the Examiner's reasoning in finding the claims obvious from Takahashi is clearly based on impermissible hindsight in view of Appellants specification.

Appellants submit that in order to have arrived at the subject matter recited in the present claims, one of ordinary skill in the art would had to have performed numerous selections. Specifically, one would had to have first picked a bimetal alloy (as opposed to a single component metal, a three component alloy, a four component alloy, a five component

alloy, a six component alloy or a seven component alloy) from Takahashi's list of preferred metals, then one would have had to have selected Zn and Te as the two components for the bimetal alloy, and then still further would had to have chosen Zn and Te to be present in the amounts of 60-70 atomic % Zn to 30-40 atomic % Te. These selections are in no way indicated nor disclosed in Takahashi, and thus are clearly based solely on the Examiner's selective hindsight "picking and choosing" from the Takahashi disclosure. The Examiner's analysis to have arrived at the present claims from Takahashi is clearly based on impermissible hindsight in view of Appellants' specification.

a. Takahashi Does Not Describe The Combination of Zn and Te In A Bimetal Alloy

Takahashi does not describe an active layer comprised of a bimetal alloy. Takahashi merely identifies 38 different metals (including Zn and Te) that may be included in a heat mode recording layer "individually or in combination." See Takahashi, col. 3, lines 52-55. Takahashi further identifies seven "preferred metals" (including Zn and Te). See Takahashi, col. 3, lines 56-58.

However, Takahashi does not describe combining any of the listed metals into a bimetal alloy, and thus would not have provided one of ordinary skill in the art with any reason or rationale to have selected only two metals from either of the lists in Takahashi.

Even if Takahashi could be viewed as describing a bimetal alloy, Takahashi does not describe Zn-Te in combination in a bimetal alloy. Takahashi merely identifies Zn and Te as "preferred metals" among several other metals including Mg, Al, In, Sn and Bi that may be included in a heat mode recording layer. See Takahashi, col. 3, lines 57-58.

As such, Takahashi does not describe selecting Zn and Te only from the "preferred metal" list to form a bimetal alloy, and would not have provided one of ordinary skill in the

art with a reason or rationale to have formed a heat mode recording medium using a bimetal alloy of Zn and Te.

2. An Obvious To Try Rationale Does Not Support The Rejection

Furthermore, this is not a situation where an "obvious to try" rationale supports the rejection. As explained in MPEP §2143E, the "obvious to try" rationale requires a finding that there was a finite number of identified, predictable potential solutions to a recognized need or problem.

As was discussed above, Takahashi does not describe a finite number of solutions, but a large number of possible combinations. Even if one used the "preferred metals", Takahashi describes (1) a one component, (2) a two component, (3) a three component, (4) a four component, (5) a five component, (6) a six component and (7) a seven component material as possible combinations, which is over 100 possible combinations.

Thus, it is not possible to find that there was a finite number of identified, predictable potential solutions to a recognized need or problem from the broad identification of the seven preferred metals in Takahashi. There is only a general indication of a large number of possible materials, with no direction in Takahashi as to which materials to select for further evaluation. Moreover, with this large number of possible combinations, it cannot be concluded that all possible combinations offer a predictable outcome. Accordingly, the "obvious to try" rationale also cannot be used to support the above rejection.

3. Takahashi Would Not Have Provided One Of Ordinary Skill In The Art With Any Reason Or Rationale To Have Tested All Of The Percentages For Each Of The "Preferred Metals" Described In Takahashi

Takahashi also would not have provided one of ordinary skill in the art with any reason or rationale to have not only tested all of the possible alloys from the "preferred

metals", but then to have further tested various percentages for each of the "preferred metals" described in Takahashi.

The Examiner admits that Takahashi does not describe or mention an active layer comprised of a Zn-Te alloy in the recited Zn and Te amounts of claims 12 and 13. However, the Examiner alleges that it would have been obvious for one of ordinary skill in the art to have experimentally varied the amounts of Zn and Te in the recording layer by testing all percentages of Zn and Te. In other words, the Examiner is alleging that the amount of Zn and Te in the recording layer is a result-effective variable. Appellants disagree with the Examiner's conclusion.

Takahashi does not describe an active layer comprised of a Zn-Te alloy in the recited Zn and Te amounts. Aside from the inappropriate reliance on hindsight described above, Takahashi also provides no indication that the ratio of Zn and Te is a result-effective variable. The Examiner alleges that Takahashi describes that Zn and Te are "to promote the sensitivity in the recording layer." See Final Rejection, page 4 (citing Takahashi, col. 4, lines 1-3). Appellants respectfully submit that the Examiner is misconstruing the section of Takahashi and thus forming an unfounded conclusion.

For convenience, column 4, lines 1-19 of Takahashi recites:

> This metal for the recording layer may be incorporated with a substance that promotes the sensitivity or thermal deformation. Also, the recording layer may be laminated with a layer made of such a substance. In the former case, the technique of codeposition may be used.
>
> Substances which may be used for the object mentioned above include, for example, oxides such as PbO, WO_3, TiO_2, SiO, SiO_2, and ZrO_2 ; chalcogenide substances containing at least one of Ge, In, Sn, Cu, Ag, Fe, Bi, Al, Si, Zn, and V and chalcogen selected at least one of S, Se and Te; and halides such as PbX_2, AgX, SnX_2, SbX_5, and SbX_3 (where X is F, Cl, Br, or I). In addition, the following metal sulfides and oxides disclosed in Japanese Patent Application (OPI) Nos. 78236/1976 and 20821/1977 may be used for the same object. It is also possible to use sulfides such as GeS, GeS_2, Cr_2S, MoS_2, CoS, NiS, and PdS, flourides such as MgF_2, CaF_2 and RhF_2 and metal oxides such as MoO, InO, In_2O, and GeO.

The above section of Takahashi describes that the metal or metal alloy used in the recording layer may include another material or additive, such as (1) oxides, (2) chalcogenide substances or (3) halides, for example to increase the sensitivity and reduce thermal deformation. More specifically, the chalcogenide additive may be comprised of at least one of eleven different metals (e.g., Ge, In, Sn, Cu, Ag, Fe, Bi, Al, Si, Zn and V) and at least one chalcogen selected from three different metals (e.g., S, Se and Te).

For one of ordinary skill in to have arrived at a chalcogenide additive comprised of Zn and Te, such a person would have been required to have once again performed the same "picking and choosing" analysis described above by isolating Zn from the other ten metals and Te from the other two chalcogens in order to have arrived at a chalcogenide additive comprised of Zn and Te.

Furthermore, the above-cited passage of Takahashi provides no indication that the ratio of Zn and Te with respect to each other would affect any particular result. Takahashi does not describe that the Zn-Te ratio is a result-effective variable because Takahashi is silent on the amount of Zn and Te necessary to have achieved a desired result or altered any property of the alloy. As such, Takahashi does not "recognize" that the Zn-Te ratio is a result-effective variable.

Thus, because Takahashi does not recognize or identify that the amount of Zn relative to the amount of Te in an alloy (i.e., the Zn and Te ratio) is a "result-effective variable," one of ordinary skill in the art would not have been motivated by Takahashi to have sought the specific alloy recited in claim 12. As such, Takahashi does not provide a basis to assert that one would have found it obvious to have varied the Zn and Te amounts via routine experimentation or optimization.

4. Rebuttal Of Examiner Arguments In The Advisory Action

a. The Examiner's Allegation That It Would Have Been Obvious To One Of Ordinary Skill In The Art To Have Selected Bimetallic Alloys Is In Error

The Examiner in the Advisory Action alleges that Takahashi describes a bimetallic alloy because (1) Takahashi describes that the preferred metals may be "used individually or in combination", (2) such a description allegedly implies that the "preferred metals" may be combined in an alloy, (3) a bimetallic alloy is the "simplest" form of a combination of metals and (4) Takahashi does not specifically exclude bimetallic alloys. See the Advisory Action, page 3. Applicants respectfully disagree.

Appellants respectfully submit that the Examiner has provided no basis for one of ordinary skill in the art to have found a bimetallic alloy to be a logical choice as the allegedly "simplest" form of alloy.

Simple is a relative term, and merely the fewest number of components does not imply simplest. Availability of metals, compatibility with other metals, melting point, etc., may make a three-component alloy simpler to derive than a two-component alloy. Further, even under the Examiner's view, "simplest" would direct one to the use of pure metals (i.e., single component materials) in Takahashi instead of alloys. The Examiner's allegation of simplicity directing one to bimetallic alloys is thus without basis and incorrect.

As recited above, Takahashi's list of preferred metals would have merely provided one of ordinary skill in the art with six alternatives for the alloy (i.e., a single component alloy, three component alloy, four component alloy, five component alloy, six component alloy and a seven component alloy) besides a bimetallic alloy. As such, the selection of the bimetallic alloy was clearly not described by Takahashi and the Examiner's analysis continues to be based clearly on impermissible hindsight in view of Appellants' specification.

b. The Examiner Is Misapplying the Standard For Determining Obvious To Try

The Examiner alleges in the Advisory Action that Appellants assertion of an "obvious to try" argument would be incorrect is allegedly unclear because Appellants allegedly pointed out a "finite number of possibilities" and the Examiner demonstrated that one having ordinary skill can identify the total number of possibilities. See Advisory Action, page 4. Appellants respectfully disagree.

The Examiner appears to be focusing solely on the "finite" portion of the obvious to try analysis. However, as described above, an obvious to try analysis requires a finite number of identified, predictable solutions. See MPEP §2143E. Although at least 127 combinations of metals from the preferred metal list of Takahashi appear to be possible, and 127 is a finite number, Appellants submit that any number, except infinity, can be considered "finite." Under the Examiner's reasoning, it would be obvious for one of ordinary skill in the art to test each and every single combination in a prior art reference that identifies over 10,000,000 combinations (i.e., solutions) because 10,000,000 is a finite number. An obvious to try analysis to try analysis clearly the solutions be "identified, predictable solutions."

As described in *In re O'Farrell*, the Federal Circuit held that an obvious to try standard requires "indication in the prior art as to which parameters were critical or which choices were likely to be successful" and further held that "general guidance" from the prior art is not sufficient. See *In re O'Farrell*, 7 USPQ 2d. 1673, 1681 (CCPA 1988). Furthermore, in *Pfizer Inc. v. Apotex*, the Federal Circuit held that the prior art must provide "ample motivation" for one of ordinary skill in the art to have narrowed the possibilities for a compound. See *Pfizer Inc. v. Apotex*, 480 F.3d 1350, 1363, 1367 (CCPA 2007). In other words, the art must provide some reason for one to take a particular path from a general

teaching, a general teaching alone being insufficient in direction one to a identified, predictable solutions.

Takahashi's disclosure of the seven "preferred metals" is no more than a general disclosure of the metals that could have been used in the active layer and thus would not have provided one with the necessary direction to have formed the alloy in the amount recited in claim 12. As such, Appellants respectfully submit that Takahashi does not provide a basis to conclude obviousness on an obvious to try rationale.

c. The Examiner Is Misapplying the Standard For Determining What Is A Result-Effective Variable

The Examiner alleges in the Advisory Action that the basis (i.e., promoting sensitivity and largest signal to-noise) for his allegation that the ratio of Zn to Te is a result-effective variables remains correct because "these result ffective variables would have been known to one having ordinary skill in the art at the time the present invention was made, and they also would been known at the time of Takahashi was made." See Advisory Action, page 5. Appellants respectfully disagree.

In addition to the reasons described above detailing why the Zn-Te ratio cannot be considered a result-effective variable, Appellants submit that the Examiner is incorrectly applying the standard described for a variable to be considered a result-effective variable. A variable must be recognized in the art to be considered a result-effective variable. See MPEP §2144.05(II)(B) citing In re Antoine, 559 F.2d 618 (CCPA 1977).

In contrast, the Examiner is broadly redefining the standard for a result-effective variable to include all variables known to one having ordinary skill in the art. Under the Examiner's reasoning, any variable could be considered to be a result-effective variable, so long as one of ordinary skill in the art could have at one point envisioned optimization of the variable. Such a reasoning would completely eviscerate any standard for a result-effective

variable, and open the floodgates of allowing the Patent Office to simply allege that it would have been obvious for one to have optimized any variable, when the real basis for optimizing that variable is clearly based on impermissible hindsight in view of the applicant's specification.

Appellants submit that the Examiner has not cited a reference that describes any result that could be affected by the optimization a Zn-Te ratio. The Examiner's reasoning that the Zn and Te ratio can be considered a result-effective variable thus remains fundamentally flawed.

5. Conclusion

Accordingly, the Examiner's assertions are wholly based on hindsight observations based on Appellants' specification, and are therefore defective. Thus, Takahashi does not teach or suggest "wherein the inorganic material is tellurium and zinc alloy only comprising an atomic percentage of between 60% and 70% of zinc and between 30% and 40% of tellurium," as recited in claim 12.

For all the foregoing reasons, the 35 U.S.C. §103(a) rejection based upon Takahashi alone is improper and should be reversed.

B. Claims 15-16 Would Not Have Been Obvious Over Takahashi In View Of Stevens or Holster

1. Stevens Or Holster Do Not Remedy the Deficiencies of Takahashi

Stevens or Holster do not remedy the deficiencies of Takahashi detailed above. The Examiner introduced Stevens and Holster as allegedly describing the use of a semi-reflective layer.

Neither Stevens nor Holster remedy the deficiencies of Takahashi. Stevens merely describes a gold semi-reflective layer on the front face of two recording layers in a two-sided medium. See Stevens, the Abstract. Furthermore, Holster merely describes a partial reflective

layer comprised of zinc selenide in a single-sided dual recording layer. See Holster, col. 10, lines 31-54.

As such, Stevens and Holster do not describe an optical recording medium comprising an active layer made of inorganic material, presenting a front face for receiving an optical radiation during writing operations, and a rear face, wherein the inorganic material is a tellurium and zinc alloy consisting of an atomic percentage of between 60% and 70% of zinc and between 30% and 40% of tellurium as recited in claim 12.

2. Conclusion

Stevens or Holster alone, or in combination with Takahashi, thus would not have provided one of ordinary skill in the art with a reason or rationale to have selected Zn and Te to be present in a bimetal alloy in the specific amounts recited in claim 12. As such, the 35 U.S.C. §103(a) rejection maintained by the Examiner is improper and should be reversed.

C. Claims 21-22 Would Not Have Been Obvious Over Takahashi in View of Tamura

1. Tamura Does Not Remedy the Deficiencies of Takahashi

Tamura does not remedy the deficiencies of Takahashi detailed above. The Examiner introduced Stevens and Holster as allegedly describing the use of a protective layer

Tamura does not describe an optical recording medium comprising an active layer made of inorganic material, presenting a front face for receiving an optical radiation during writing operations, and a rear face, wherein the inorganic material is a tellurium and zinc alloy consisting of an atomic percentage of between 60% and 70% of zinc and between 30% and 40% of tellurium as recited in claim 12.

2. Conclusion

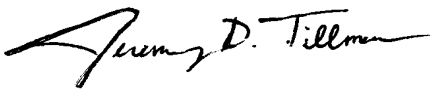
Tamura alone, or in combination with Takahashi, would not have provided one of ordinary skill in the art with a reason or rationale to have selected Zn and Te to be present in a

bimetal alloy in the specific amounts recited in claim 12. As such, the 35 U.S.C. §103(a) rejection maintained by the Examiner is improper and should be reversed.

VIII. CONCLUSION

For all of the reasons discussed above, it is respectfully submitted that the rejections are in error and that claims 12-16 and 20-22 are in condition for allowance. For all of the above reasons, Appellants respectfully request this Honorable Board to reverse the rejections of claims 12-16 and 20-22.

Respectfully submitted,



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Filed: December 9, 2008

APPENDIX A - CLAIMS APPENDIX

CLAIMS INVOLVED IN THE APPEAL:

1-11. (Canceled)

12. Optical recording medium comprising an active layer made of inorganic material, presenting a front face for receiving an optical radiation during writing operations, and a rear face wherein the inorganic material is a tellurium and zinc alloy consisting of an atomic percentage of between 60% and 70% of zinc and between 30% and 40% of tellurium.

13. Recording medium according to claim 12, wherein the inorganic material is a tellurium and zinc alloy consisting of an atomic percentage of 65% of zinc and 35% of tellurium.

14. Recording medium according to claim 12, wherein the active layer has a thickness comprised between 15 nanometers and 50 nanometers.

15. Recording medium according to claim 12, comprising a semi-reflecting layer arranged on the front face of the active layer and having a thickness comprised between 4 nanometers and 10 nanometers.

16. Recording medium according to claim 15, wherein the semi-reflecting layer is made of metal selected from the group consisting of aluminum, gold, silver, copper, zinc, titanium, nickel and alloys thereof.

17.-19. (Canceled)

20. Recording medium according to claim 12, comprising a protective layer of polymer material on the rear face.

21. Recording medium according to claim 20, wherein the protective layer is polydimethylsiloxane-based and has a thickness comprised between 10 micrometers and 100 micrometers.

22. Recording medium according to claim 20, wherein the protective layer is deformable.

APPENDIX B - EVIDENCE APPENDIX

NONE

APPENDIX C - RELATED PROCEEDINGS APPENDIX

NONE